

## REMARKS

Herein, the "Action", "Office Action", or "Office" refers to the Office Action dated January 26, 2005.

The claims remaining pending here are 1, 4, 17, 21-23, 26, 33, 34, 37-39, and 42. Claims amended are none. Claims canceled, non-elected, or withdrawn are none. There are no new claims.

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### Formal Claim Rejections

#### Claim Rejections under §112

The Office indicates the following:

2. Claim 37 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
3. Regarding claim 37, it is not clear as to how a plurality of first segments or second segments can exist.

Accordingly, Applicant amends claim 37. This amended claim should be definite.

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### Substantive Claim Rejections

#### Claim Rejections under §102 and §103

The Office rejects all pending claims under §102 and/or §103. For the reasons set forth below, the Office has not made out shown anticipation (i.e., §102). Likewise, for the reasons set forth below, the Office has not made out a

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1      *prima facie* case of obviousness (i.e., §103). Accordingly, Applicant respectfully  
 2      requests that the rejections be withdrawn and the case be passed along to issuance.

3      The Office's rejections are based upon one or more of the following  
 4      references (in combination or alone):

- 5      • **Cookson:** *Christopher J. Cookson*, US Patent No. 6,591,365<sup>1</sup>;
- 6      • **Bloom:** *Bloom et al.*, US Patent No. 6,332,194.

7      **The Application**

8      The Application<sup>2</sup> describes an audio watermarking technology for inserting  
 9      and detecting strong and weak watermarks in audio signals. The strong watermark  
 10     identifies the content producer, providing a signature that is embedded in the audio  
 11     signal and cannot be removed. The strong watermark is designed to survive all  
 12     typical kinds of processing, including compression, equalization, D/A and A/D  
 13     conversion, recording on analog tape, and so forth. It is also designed to survive  
 14     malicious attacks that attempt to remove the watermark from the signal, including  
 15     changes in time and frequency scales, pitch shifting, and cut/paste editing.

16     The weak watermark identifies the content as an original. With the  
 17     exception of D/A and A/D conversion with good fidelity, other kinds of  
 18     processing (especially compression) significantly remove the weak watermark. In  
 19     this manner, an audio signal can be readily identified as an original or a copy  
 20     depending upon the presence or absence of the weak watermark signature.

21     In one described implementation, a watermark encoding system is  
 22     implemented at a content provider/producer to encode the audio signal with both a

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23     <sup>1</sup> Cookson issued on 7/8/2003, was filed on 1/6/2000; and claims priority to provisional filing on  
 24     1/21/1999.

25     <sup>2</sup> This Application claims priority to a 5/22/1999 filing of a parent patent application.



1 strong and a weak watermark. The watermark encoding system has a converter to  
 2 convert an audio signal into frequency and phase components and a mask  
 3 processor to determine a hearing threshold for corresponding frequency  
 4 components. The watermark encoding system also has a pattern generator to  
 5 generate both the strong and weak watermarks, and a watermark insertion unit to  
 6 selectively insert either the strong or weak watermark into the audio signal. More  
 7 particularly, the watermark insertion unit adds the strong watermark to the audio  
 8 signal when the signal exceeds the hearing threshold by a buffer value (e.g., 1-8  
 9 dB). If the signal falls below the hearing threshold by more than the buffer value,  
 10 the watermark insertion unit adds the weak watermark component to the audio  
 11 signal. When the signal falls within the buffer area about the hearing threshold,  
 12 the insertion unit takes no action because the signal component is not significantly  
 13 above or below the threshold to be watermarked.

14 A watermark detecting system is implemented at a client that plays the  
 15 audio clip. Like the encoding system, the watermark detecting system has the  
 16 converter, the mask processor, and the watermark pattern generator. It is also  
 17 equipped with a watermark detector that locates any strong and weak watermarks  
 18 in the audio clip. The watermark detector determines which block interval of the  
 19 watermarked audio signal contains the watermark pattern and if the strong or weak  
 20 watermark generated by a particular set of keys is present in that block interval of  
 21 the signal.

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**Cookson**

1           **Cookson** is the primary reference upon which anticipation rejections are  
 2 based. It describes a copy-protection control system technology for protecting  
 3 against use of pirated music.

4           With this technology, two watermarks are inserted into the music to be  
 5 protected by the music publisher. One watermark is robust--it will not be  
 6 destroyed by compression. The other watermark is weak--it is designed to be  
 7 destroyed by compression. The robust mark tells a player that the music is  
 8 protected, i.e., that it is not authorized to be delivered in compressed form over an  
 9 insecure channel. If the music is found to have been compressed and it was  
 10 delivered over an insecure channel, then its play or other processing can be  
 11 restricted.  
 12

**Bloom**

13           **Bloom** is the secondary reference upon which obviousness rejections are  
 14 based. It describes a method for data preparation and watermark insertion. The  
 15 method includes the step of preparing the data at a first time by manipulating at  
 16 least one set of the data characteristics for subsequent insertion of a first  
 17 watermark.  
 18

19           The method further includes the step of inserting the first watermark by  
 20 manipulating the set of data characteristics at a second time subsequent to the first  
 21 time. In another embodiment of the method of the present invention, the method  
 22 further includes the step of inserting a second watermark at a third time, before,  
 23 during, or after the first time, by manipulating at least one set of the data  
 24 characteristics. In a variation of the present invention a method for inserting a  
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1 watermark into compressed data is provided. The compressed data has sets of data  
 2 characteristics. The method includes the steps of inserting a watermark by  
 3 manipulating the set of data characteristics; and optimizing the manipulated data  
 4 by modifying the compressed data characteristics subject to a set of constraints.

## Anticipation Rejections

### §102 Rejections based upon Cookson

The Office rejects claims 1, 4, 17, 21-23, 26, 33, 34, 37, and 42 under 35 USC §102(e) as being clearly anticipated by Cookson.

#### Claim 1

Regarding this claim, the Office indicates the following:

##### 6. Regarding claim 1, see Cookson

An audio watermarking system comprising:  
 a pattern generator configured to generate both a strong watermark and a weak watermark; (Col. 4, lines 3-7) and  
 a watermark insertion unit configured to selectively insert either the strong watermark or the weak watermark into segments of the audio signal, so that resulting segments have either the strong or the weak watermark inserted therein, but not both. (Col. 4, lines 37-43 and lines 64-66).

Cookson teaches a copy protection system, which can detect a weak and a strong watermark in an audio file. It is inherent that a system has inserted either a weak or strong watermark, but not both according to Cookson's teachings.

The Office indicates that inherent in Cookson's copy-protection system (which is designed to detect watermarks) is that "either a weak or strong watermark" has been inserted, "but not both." Applicant disagrees.

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1 On col. 2, lines 62-64, **Cookson** states (with emphasis added): "In  
 2 accordance with the principles of my invention, in one embodiment thereof, two  
 3 **watermarks or tags are inserted** into the music by the music publisher."  
 4 Applicant submits that the Cookson statement that two watermarks are inserted is  
 5 synonymous to stating that both marks are inserted. This is directly contrary to the  
 6 claim recitation that "either a weak or strong watermark" is inserted, "but not  
 7 both."

8 Furthermore, Applicant respectfully submits that the purpose and  
 9 functionality of **Cookson** relies on the insertion of both marks into a "file" (e.g.,  
 10 digital music):

11 One watermark is robust. By this is meant that it will not be destroyed by  
 12 compression. (Hereinafter, the term "compression" excludes compression that is  
 13 lossless; as used hereinafter, "compression" results in some information loss.) The  
 14 other watermark is weak—it is designed to be destroyed by compression. The robust  
 15 mark tells the player that the music is protected ("this music is not authorized to be  
 16 delivered in compressed form over an insecure channel"), i.e., if the music is found  
 17 to have been compressed and it was delivered over an insecure channel, then it  
 18 should not be played or otherwise processed. [Cookson, col. 2, line 64 through col.  
 19 3, line 7]

20 With **Cookson**, the detection of a robust watermark indicates that the  
 21 publisher of the file intended for the file's content to be protected (e.g., restricting  
 22 copying and playing of the file).<sup>1</sup> However, for **Cookson** to fully protect the file,  
 23 it must determine that the file—with a detected robust watermark—was  
 24 compressed at one time. If it was compressed at one time, then **Cookson**  
 25 necessarily presumes a weak watermark previously was inserted. This

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<sup>1</sup> See col. 3, lines 46-47: "The presence of the robust watermark is an indication that it was the publisher's intent that the music not be copied."

1 presumption is so strong that **Cookson** file should be fully protected when it  
 2 detects a robust watermark, but fails to detect a weak watermark.<sup>1</sup>

3 Applicant submits that **Cookson** does not disclose all of the features and  
 4 elements of this claim. Accordingly, Applicant asks the Office to withdraw its  
 5 rejection of this claim.

6

7 **Claim 4**

8 This claim ultimately depends upon independent claim 1. As discussed  
 9 above, claim 1 is allowable.

10 In addition to its own merits, this dependent claim is allowable for the same  
 11 reasons that its base claim is allowable. Applicant submits that the Office  
 12 withdraw the rejection of this dependent claims because its base claim is  
 13 allowable.

14

15 **Claim 17**

16 This claim recites:

- 17 • a pattern generator configured to generate both a strong  
 watermark and a weak watermark; and
- 18 • a watermark detector configured to divide a watermarked audio  
 signal into multiple portions and detect whether a single  
 watermark is present in each portion, and, if a watermark is  
 detected in a portion, further configured to determine whether that

25 <sup>1</sup> See col. 3, lines 33-35 and col. 4, lines 4-7

1 single watermark detected in that portion is either a strong or a  
 2 weak watermark.  
 3

4 Although the language of this claim differs from that of claim 1, the Office  
 5 relies on its arguments for the rejection of claim 1 for the rejection of this claim.  
 6 In as much as the Office's reliance on the preceding argument for claim 1 is valid  
 7 for this claim (considering the differences in language between claims 1 and 17),  
 8 then Applicant submits that this claim is allowable for the same reasons provided  
 9 above in response to the Office's rejection of claim 1.

10 Furthermore, Applicant respectfully submits that the Office has not shown  
 11 that **Cookson** discloses a division of "a watermarked audio signal into multiple  
 12 portions," which is recited in this claim. Moreoever, the Office has not shown that  
 13 **Cookson** discloses a detection of "whether a single watermark is present in each  
 14 portion," which is also recited in the claim.

15 Applicant submits that **Cookson** does not disclose all of the features and  
 16 element of this claim. Accordingly, Applicant asks the Office to withdraw it  
 17 rejection of this claim.

18 Claim 21

19 This claim ultimately depends upon independent claim 17. As discussed  
 20 above, claim 17 is allowable.

21 In addition to its own merits, this dependent claim is allowable for the same  
 22 reasons that its base claim is allowable. Applicant submits that the Office  
 23 withdraw the rejection of this dependent claims because its base claim is  
 24 allowable.  
 25

Claim 22

Although the language of this claim differs from that of claim 1, the Office relies on its arguments for the rejection of claim 1 for the rejection of this claim. Assuming the Office's reliance on the preceding argument for claim 1 is valid for this claim, Applicant submits that this claim is allowable for the same reasons provided above in response to the Office's rejection of claim 1.

Applicant submits that Cookson does not disclose all of the features and element of this claim. Accordingly, Applicant asks the Office to withdraw its rejection of this claim.

Claim 23

This claim ultimately depends upon independent claim 22. As discussed above, claim 22 is allowable.

In addition to its own merits, this dependent claim is allowable for the same reasons that its base claim is allowable. Applicant submits that the Office withdraw the rejection of this dependent claims because its base claim is allowable.

Claims 26 and 34

Although the language of this claim differs from that of claim 1, the Office relies on its arguments for the rejection of claim 1 for the rejection of this claim. Assuming the Office's reliance on the preceding argument for claim 1 is valid for this claim, Applicant submits that this claim is allowable for the same reasons provided above in response to the Office's rejection of claim 1.

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1       Applicant submits that **Cookson** does not disclose all of the features and  
 2 element of this claim. Accordingly, Applicant asks the Office to withdraw its  
 3 rejection of this claim.

4                   **Claim 33**

5       Although the language of this claim differs from that of claim 1, the Office  
 6 relies on its arguments for the rejection of claim 1 for the rejection of this claim.  
 7 Assuming the Office's reliance on the preceding argument for claim 1 is valid for  
 8 this claim, Applicant submits that this claim is allowable for the same reasons  
 9 provided above in response to the Office's rejection of claim 1.

10     Applicant submits that **Cookson** does not disclose all of the features and  
 11 element of this claim. Accordingly, Applicant asks the Office to withdraw its  
 12 rejection of this claim.

13                   **Claim 37**

14       Although the language of this claim differs from that of claim 1, the Office  
 15 relies on its arguments for the rejection of claim 1 for the rejection of this claim.  
 16 Assuming the Office's reliance on the preceding argument for claim 1 is valid for  
 17 this claim, Applicant submits that this claim is allowable for the same reasons  
 18 provided above in response to the Office's rejection of claim 1.

19     Applicant submits that **Cookson** does not disclose all of the features and  
 20 element of this claim. Accordingly, Applicant asks the Office to withdraw its  
 21 rejection of this claim.

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Claim 42

Although the language of this claim differs from that of claim 1, the Office relies on its arguments for the rejection of claim 1 for the rejection of this claim. Assuming the Office's reliance on the preceding argument for claim 1 is valid for this claim, Applicant submits that this claim is allowable for the same reasons provided above in response to the Office's rejection of claim 1.

Applicant submits that **Cookson** does not disclose all of the features and element of this claim. Accordingly, Applicant asks the Office to withdraw its rejection of this claim.

Obviousness RejectionsThe Office Has Not Made Out a Case of Prima Facie Obviousness

Applicant disagrees with the Office's obviousness rejections and respectfully submits that the Office has not made out a *prima facie* case of obviousness. Accordingly, Applicant respectfully requests withdrawal of these rejections.

§103 Rejections based upon Cookson and Bloom

The Office rejects claims 38 and 39 under 35 USC §103(a) as being unpatentable over **Cookson** in view of **Bloom**.

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1           Regarding these claims, the Office indicates:

2           19. Regarding claim 38, the further limitation of claim 37, see Bloom

3           ... wherein the watermark insertion unit selectively chooses segments for insertion of the watermarks  
according to an audible measure of the segments. (Col. 3, lines 14-21, and Col. 5, lines 53-61).

4           Bloom teaches a method for watermark insertion. Bloom teaches the insertion of two  
5           different watermarks, however Bloom does not teach the structure of a weak and a  
6           strong watermark. Cookson teaches a watermark detection system, which detects the  
7           presence of a weak and/or strong watermark. Cookson does not teach that an audible  
8           measure is used for inserting a watermark. It would have been obvious for one of  
9           ordinary skill in the art to combine the teachings of Bloom with those of Cookson for the  
10          purpose of retaining the perceived quality of the audio source.

11          10. Regarding claim 39, the further limitation of claim 37, see the preceding  
12          argument with respect to claim 38. The combination of Cookson and Bloom teach this  
13          feature.

14          14       Applicant respectfully disagrees with the Office's assertion that it would  
15          been obvious for one of ordinary skill in the art (OOSA) to combine the teachings  
16          of **Bloom** with those of **Cookson** for the purpose of retaining the perceived quality  
17          of the audio source.

18          18       The Office has not provided objective evidence that discloses "selectively  
19          choos[ing] segments for insertion of the watermarks according to an audible  
20          measure of the segments." Applicant respectfully submits that in the absence of  
21          objective evidence, the Office concludes that it would have been obvious for  
22          OOSA to combine the teaching of the two references for the purpose of "retaining  
23          the perceived quality of the audio source."

24          24       While the purpose provided by the Office may be a reasonable generalized  
25          motivating factor, it is not suffice. The Office still has not shown objective

1 evidence where the references specifically disclose selective watermark insertion  
2 in accordance with "an audible measure" of segments of the audio signal.  
3 Applicant submits that this feature is an explicitly recited part of these claims and  
4 cannot be reasoned away by a conclusion that uses a generalized motivation factor  
5 for combining other elements and features disclosed by the cited references.

6 Applicant submits that the Office has not shown that that the combination  
7 of the cited references discloses all of the elements and features of these claims.  
8 Furthermore, claims 38 and 39 depend upon claim 37 and, as indicated above,  
9 claim 37 is allowable. Therefore, in addition to their own merits, claims 38 and 39  
10 are allowable because their base claim is allowable.

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**Dependent Claims**

In addition to its own merits, each dependent claim is allowable for the same reasons that its base claim is allowable. Applicant submits that the Office withdraw the rejection of each dependent claim where its base claim is allowable.

**Conclusion**

All pending claims are in condition for allowance. Applicant respectfully requests reconsideration and prompt issuance of the application. If any issues remain that prevent issuance of this application, the Office is urged to contact the undersigned attorney before issuing a subsequent Action.

Respectfully Submitted,

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